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(19) **United States**(12) **Patent Application Publication**
Zhang(10) **Pub. No.: US 2009/0124466 A1**(43) **Pub. Date: May 14, 2009**(54) **TREADMILL HAVING A COMPACT SHAPE****Publication Classification**(75) Inventor: **Hao Zhang**, Malu Town (CN)(51) **Int. Cl.**
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JOHNSON HEALTH TECH/ Joe Chen**NO. 26, CHINCHUAN RD.****TA YA HSIANG 428 (TW)**(52) **U.S. Cl.** **482/54**(73) Assignee: **JOHNSON HEALTH TECH CO., LTD.**(57) **ABSTRACT**(21) Appl. No.: **12/291,558**(22) Filed: **Nov. 13, 2008**(30) **Foreign Application Priority Data**

Nov. 9, 2007 (CN) 200720195335.9

Jun. 10, 2008 (CN) 200810111151.9

The treadmill comprises a base frame adapted to rest on a surface which has left and right inner sides and left and right outer sides; a tread base having a frame including a front end, a rear end, and left and right outer surfaces; a linkage assembly having a first end connected to the front of the tread base and a second end connected to the base frame. The lateral width between the left and right outer sides of the base frame is substantially same with the lateral width between the left and right outer surfaces of the tread base; the linkage unit is approximately mounted in a space which is formed by the left and right inner surfaces of the base frame and the bottom of the tread base.

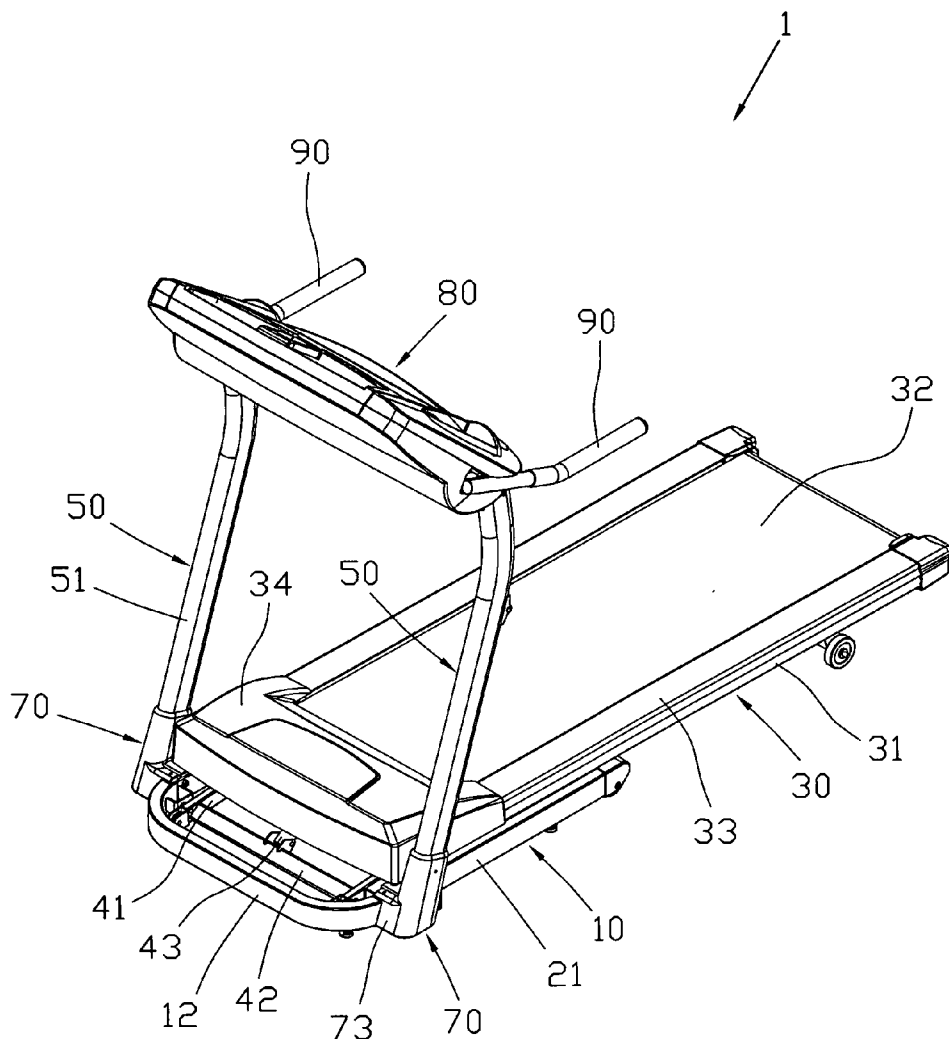


Fig. 1

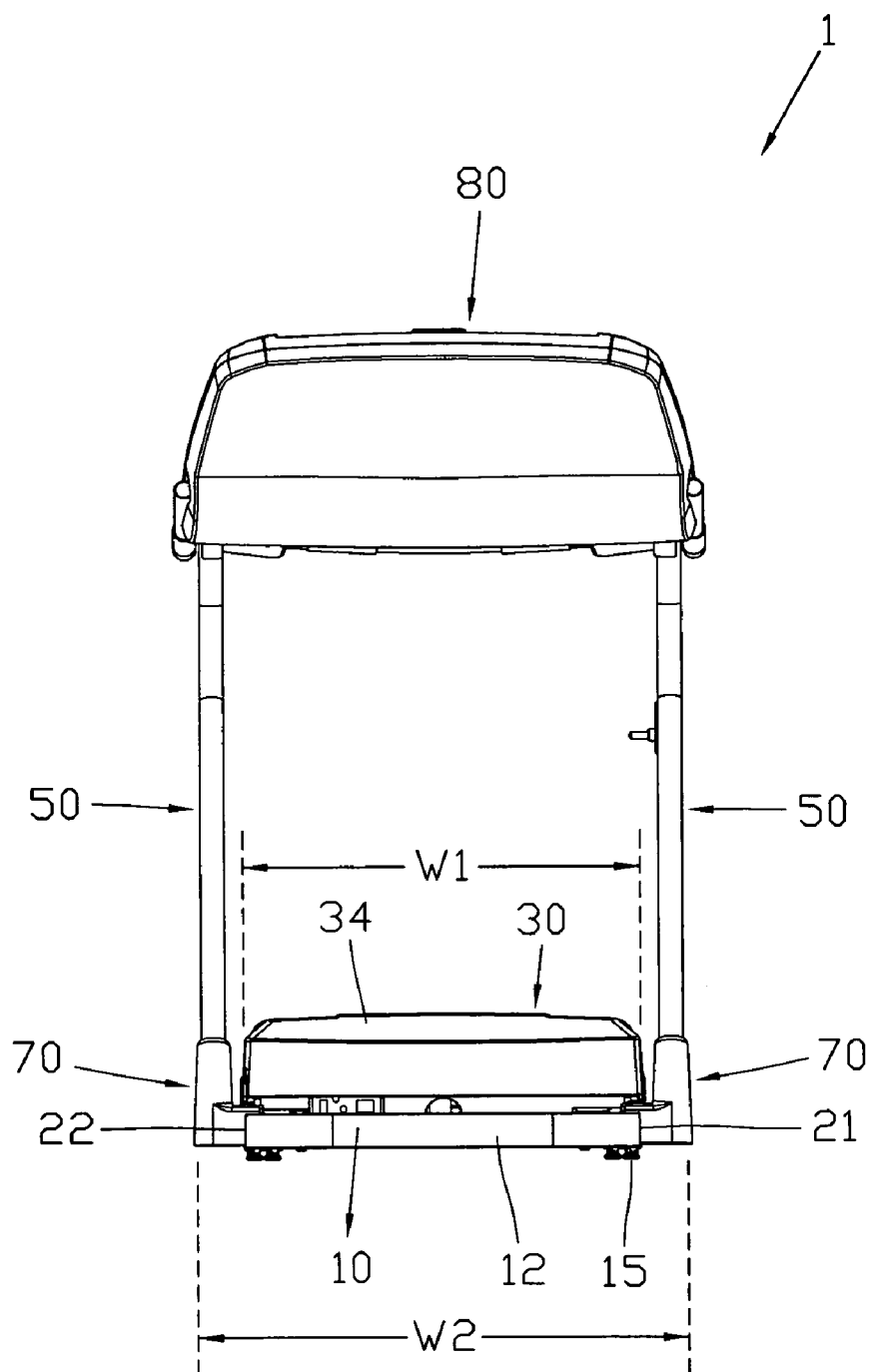


Fig. 2

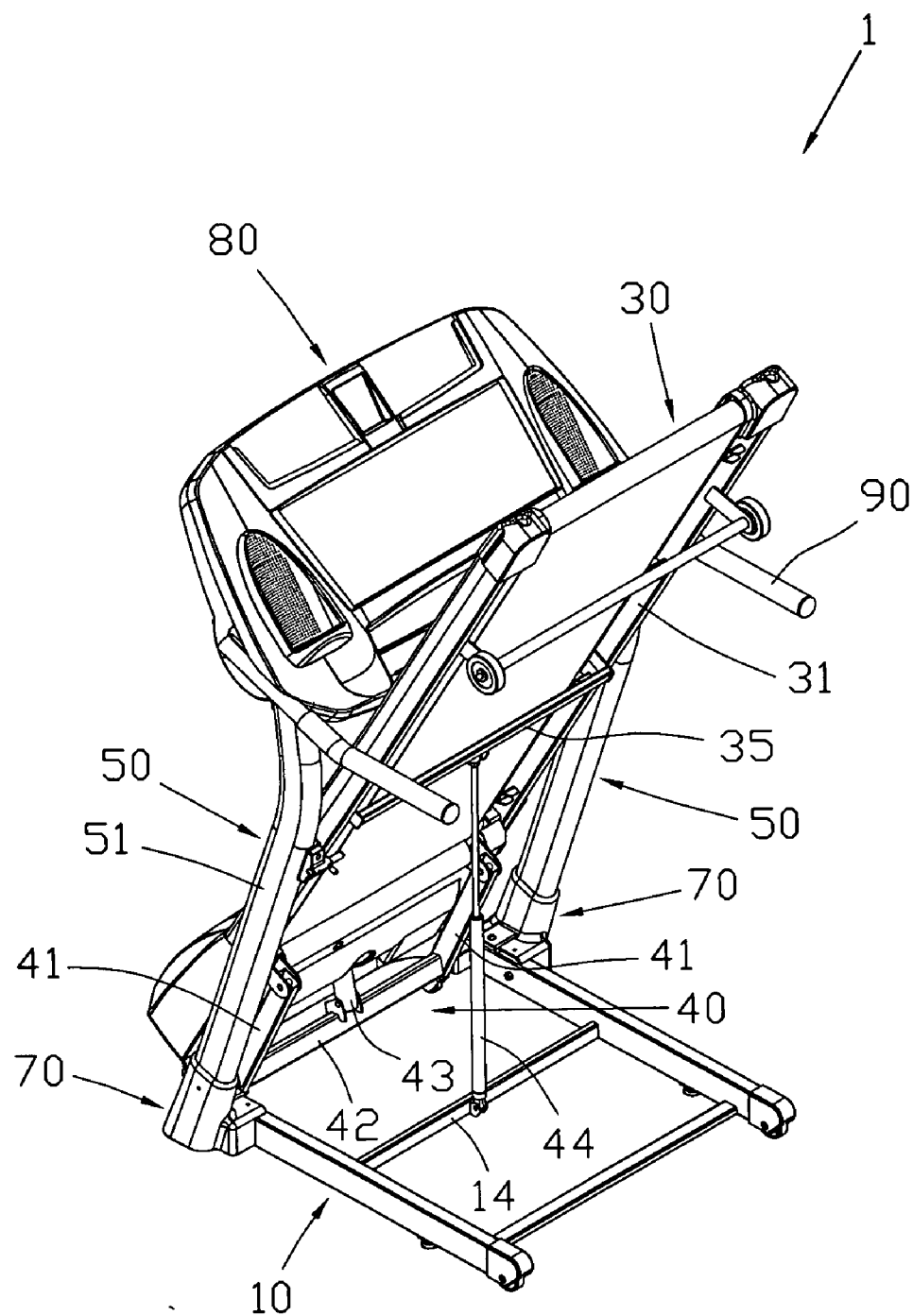


Fig. 3

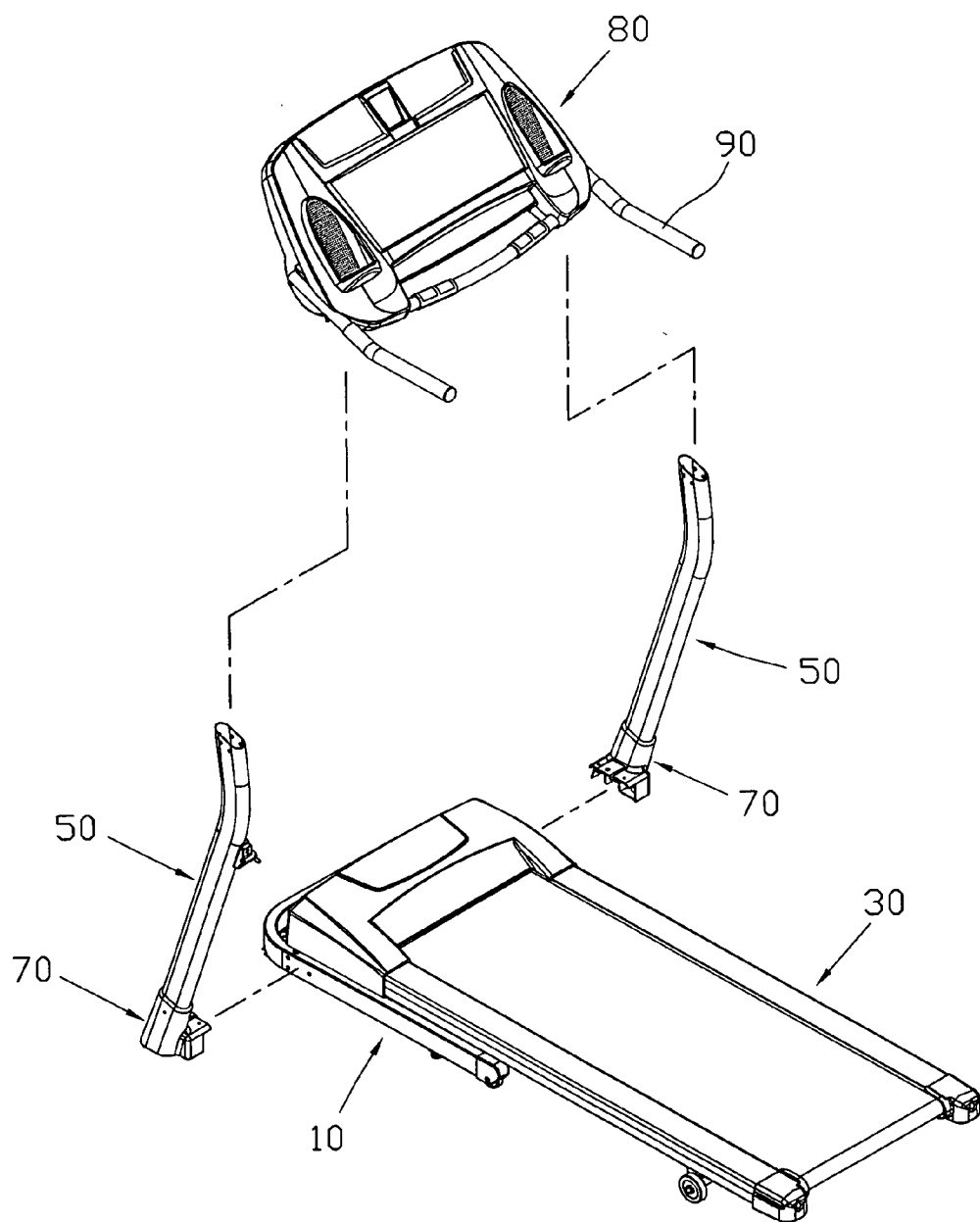


Fig. 4

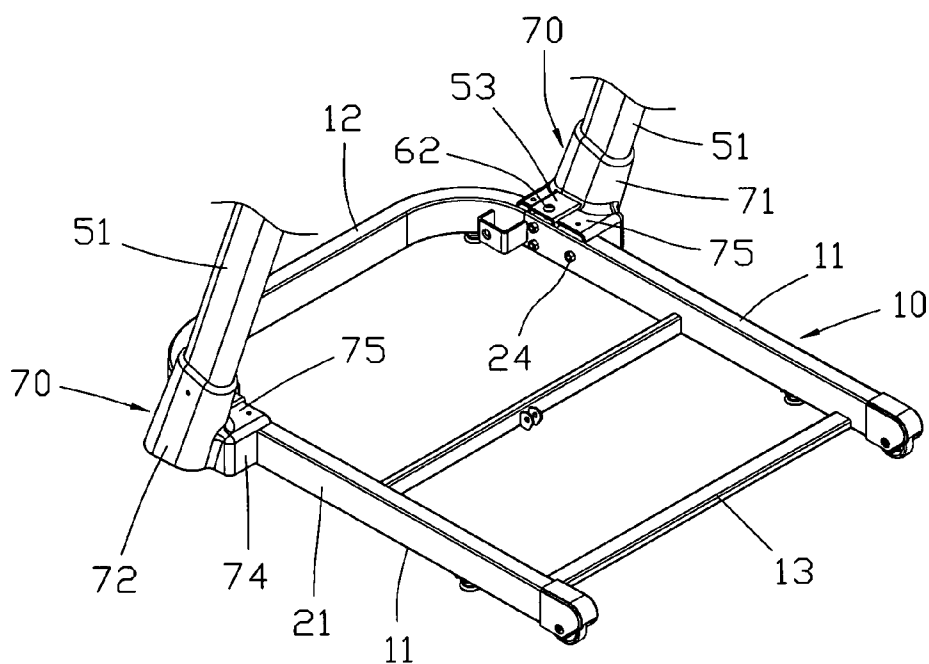


Fig. 5

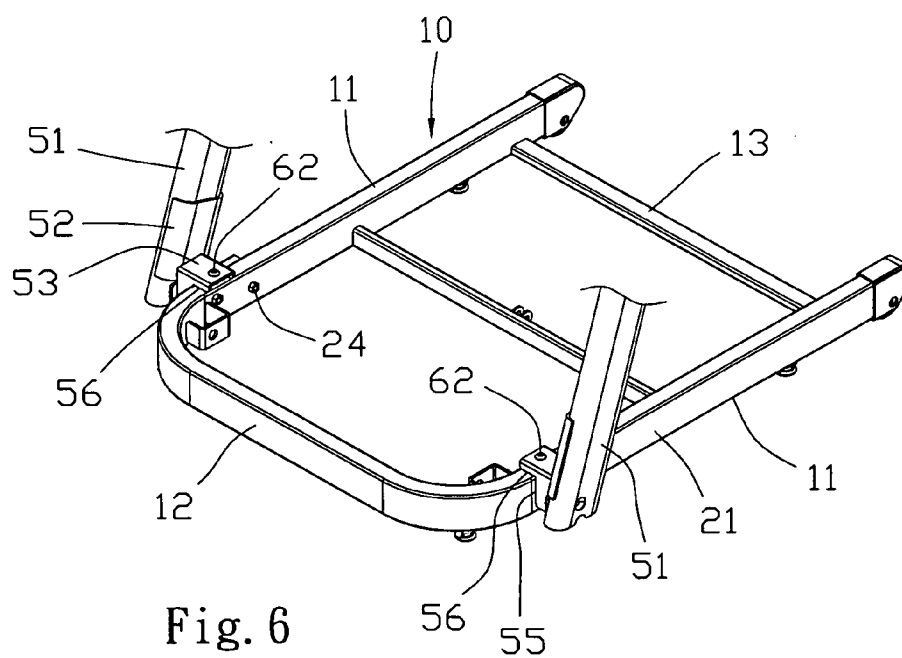


Fig. 6

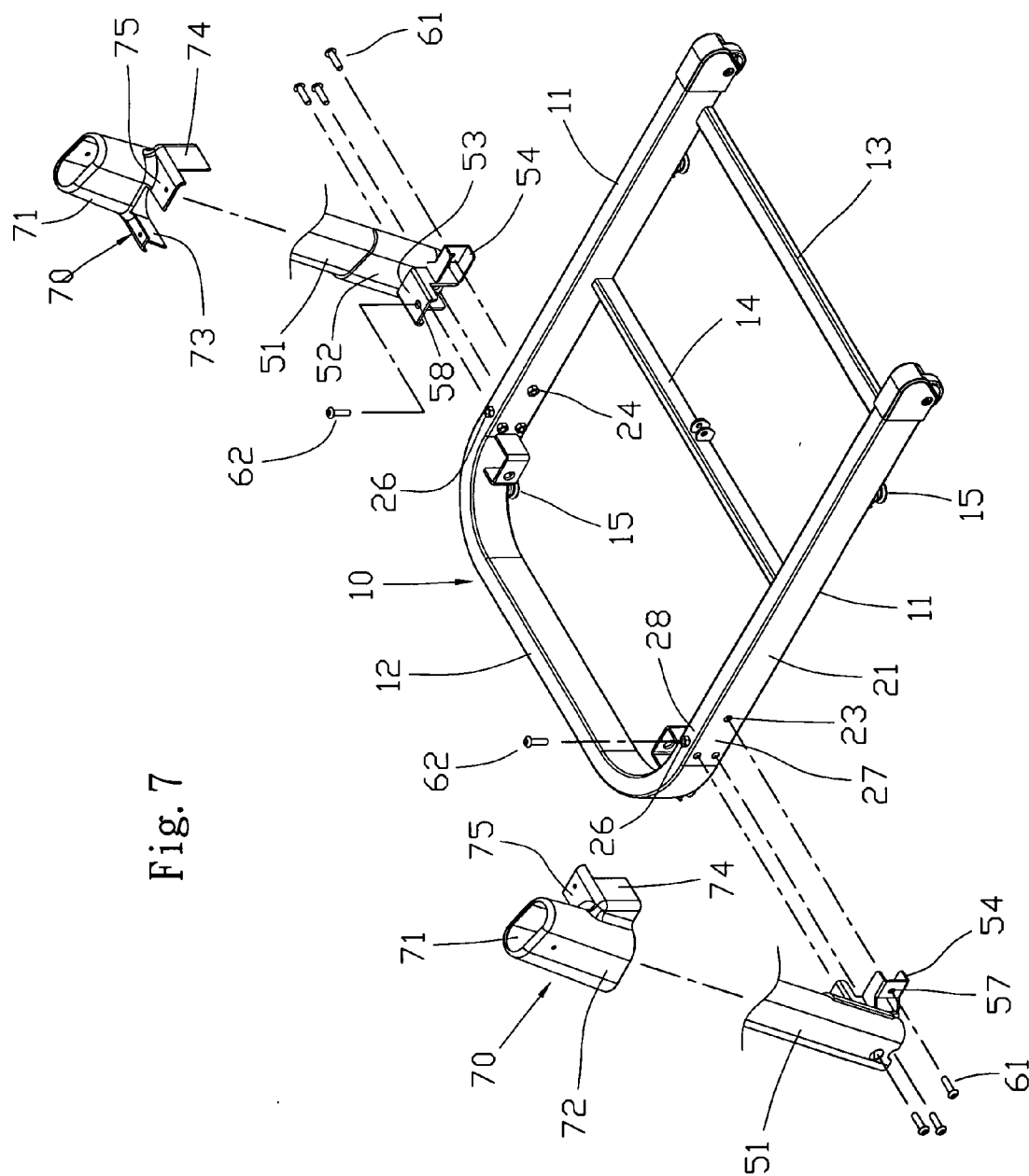


Fig. 7

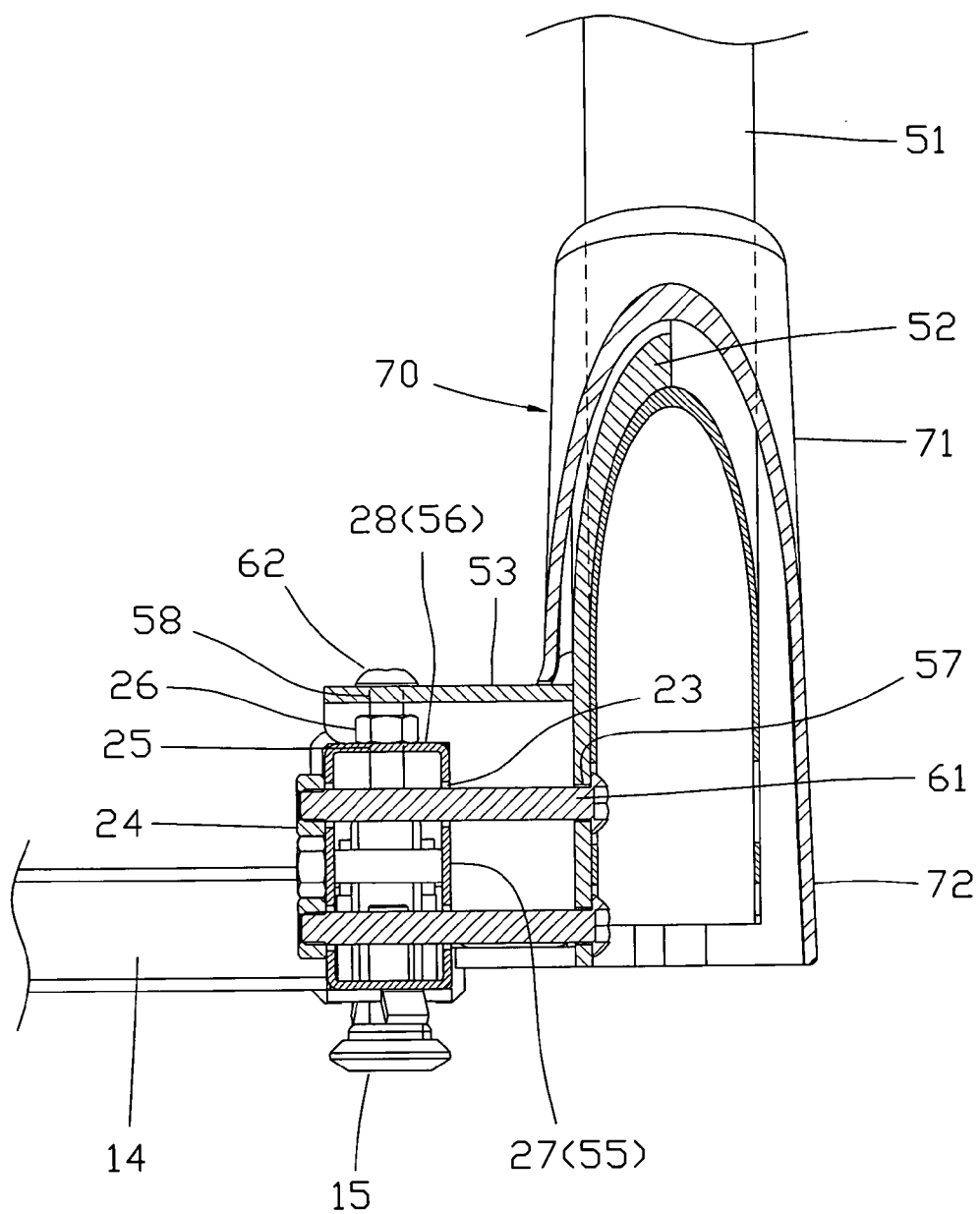


Fig. 8

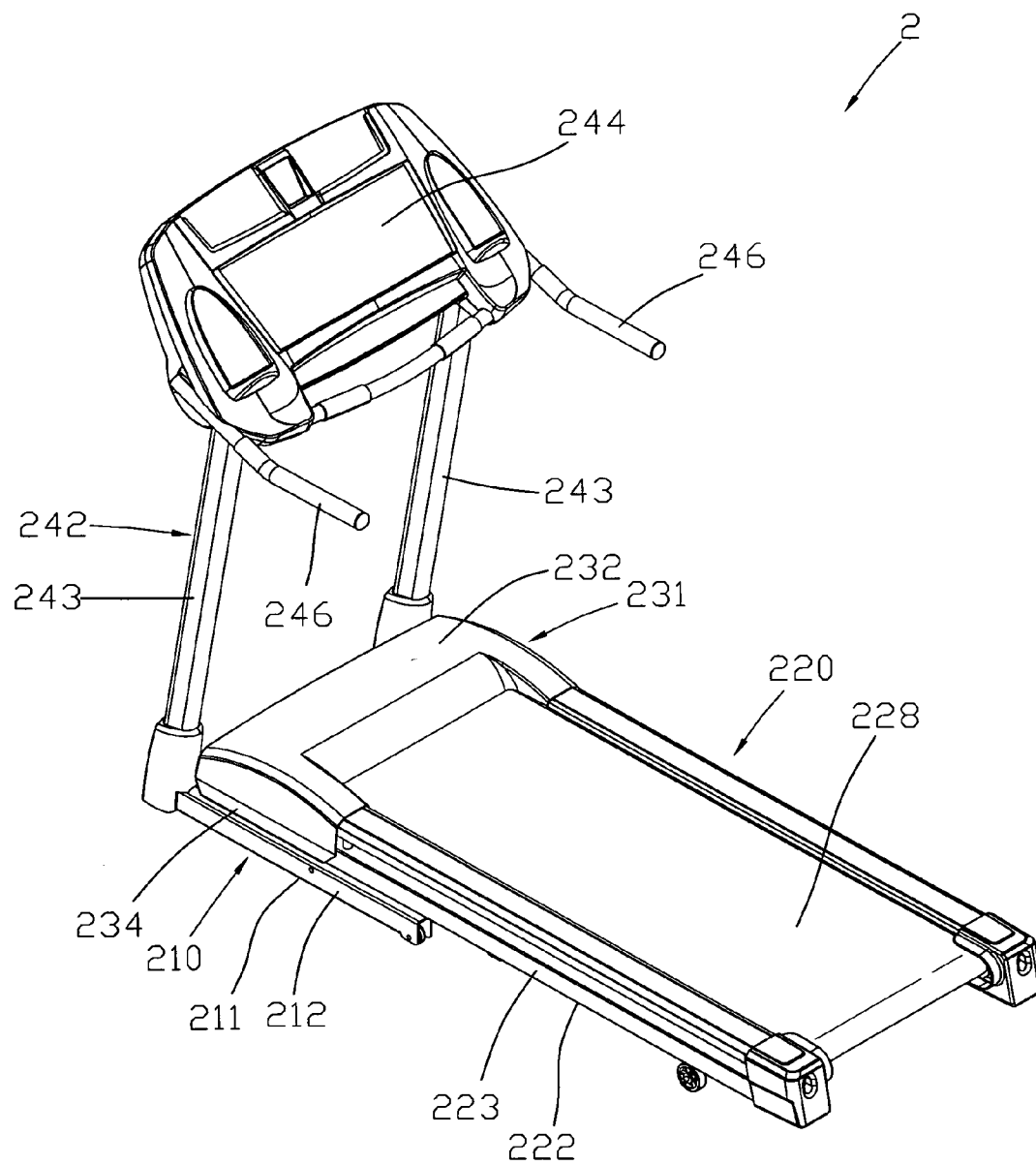


Fig. 9

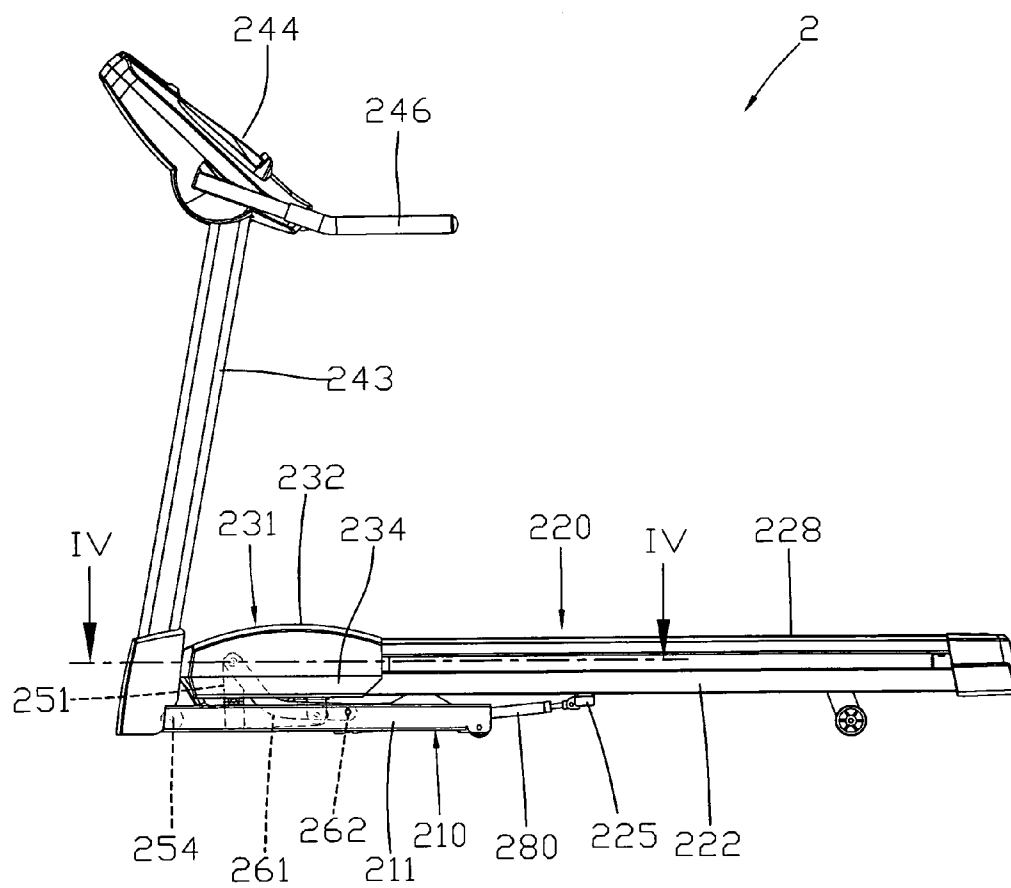


Fig. 10

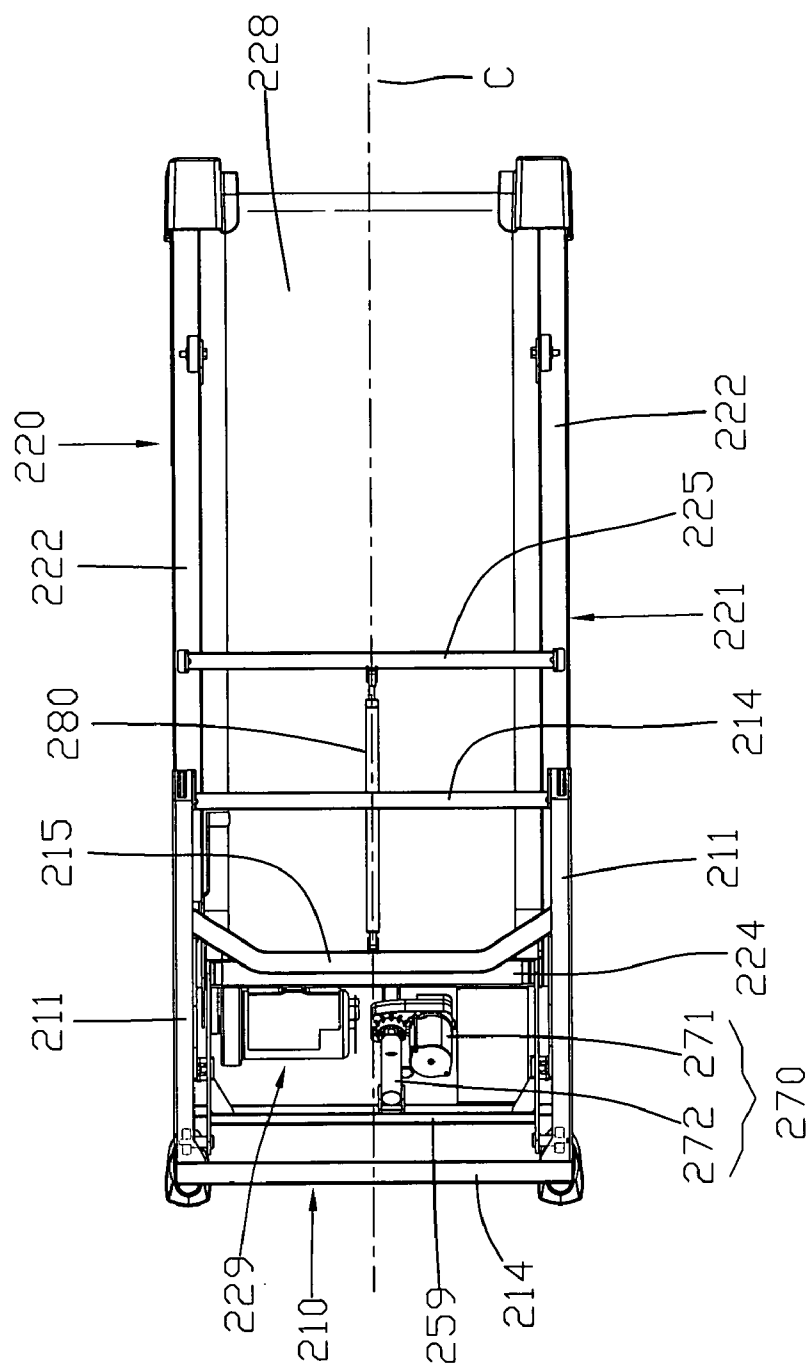
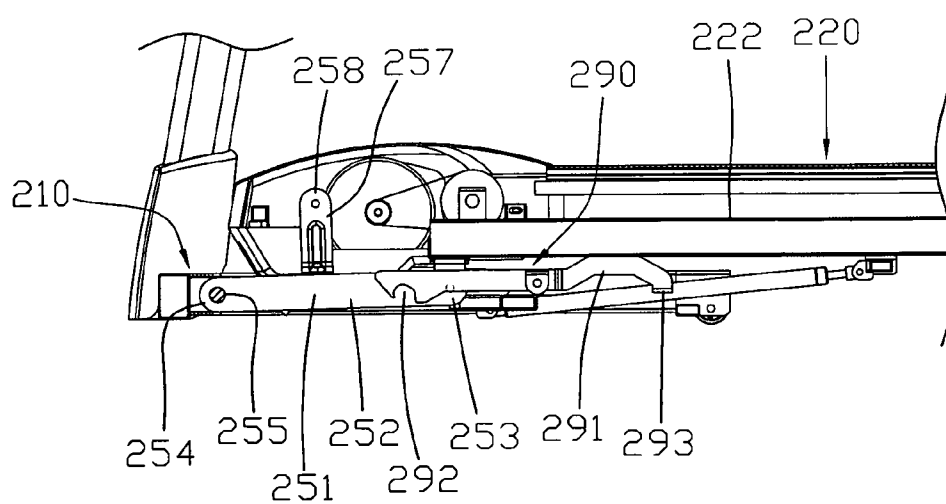
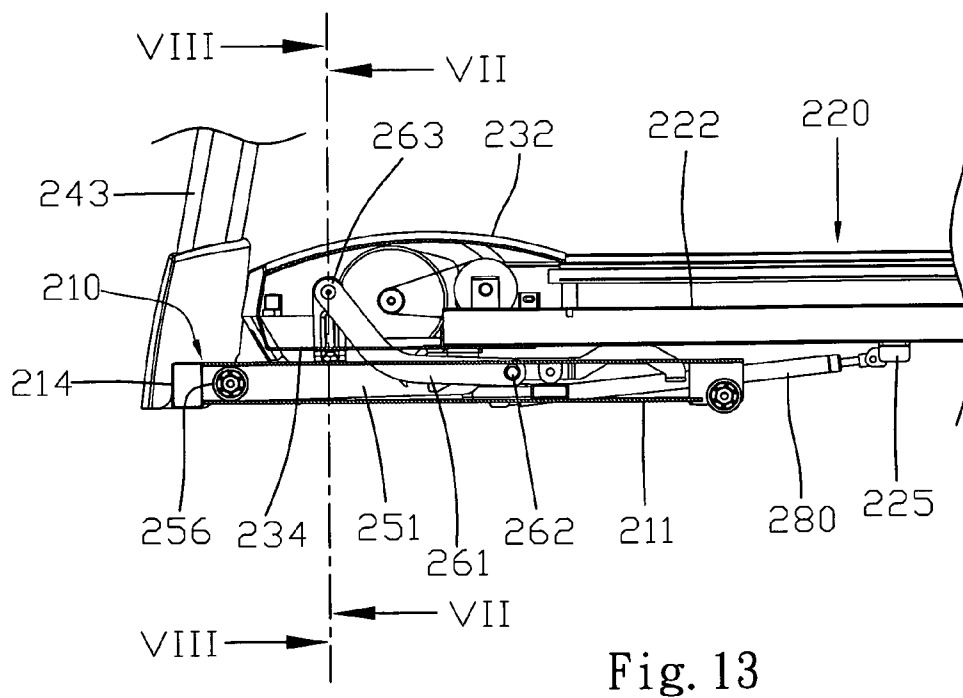


Fig. 11



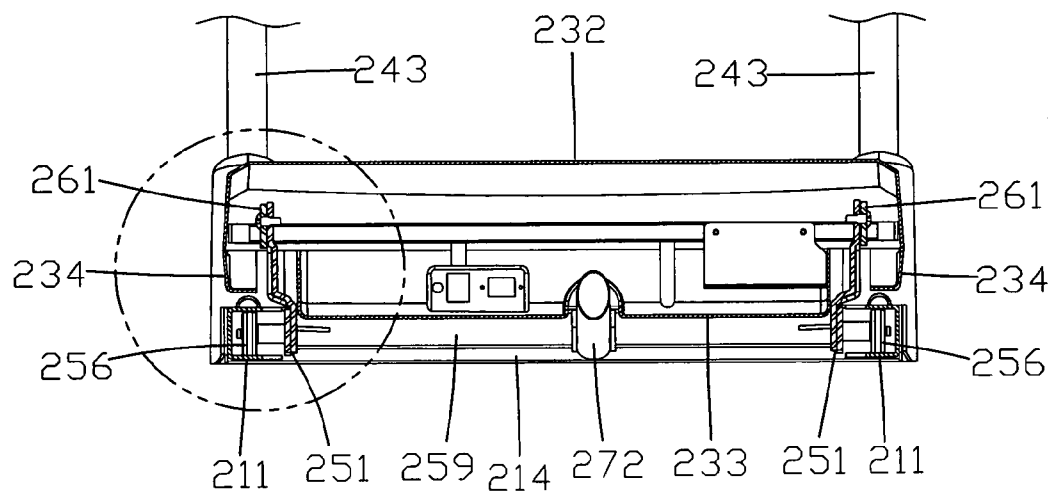


Fig. 15

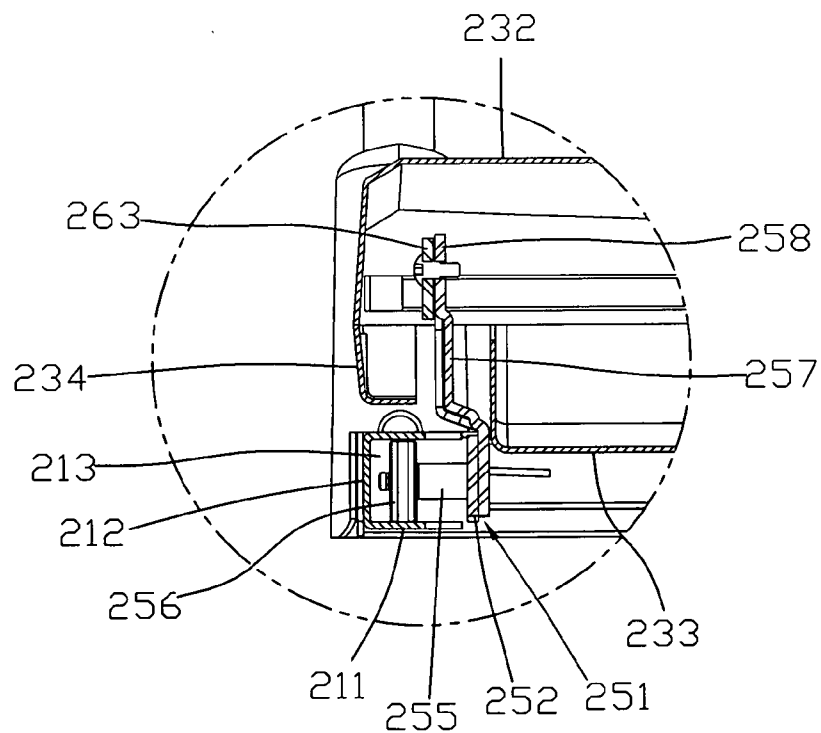


Fig. 15A

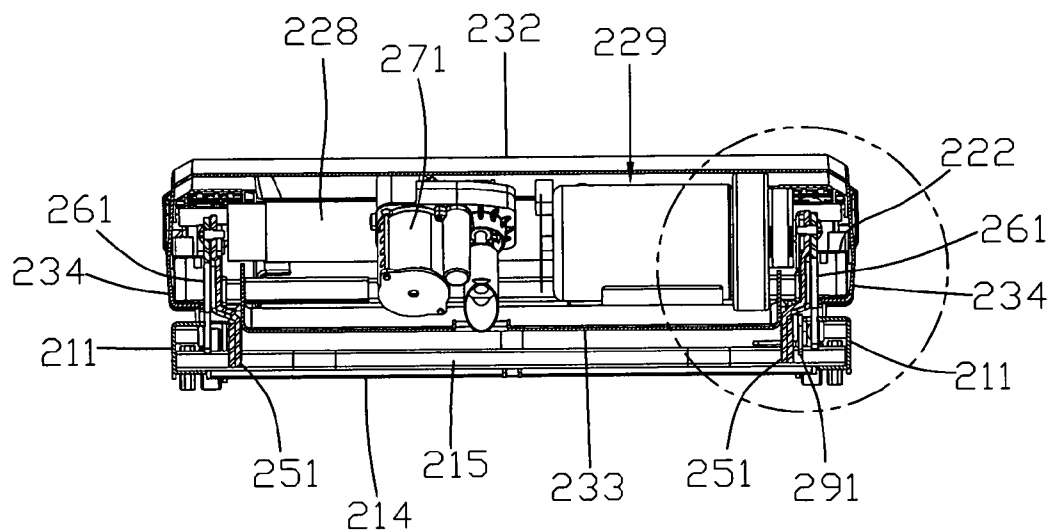


Fig. 16

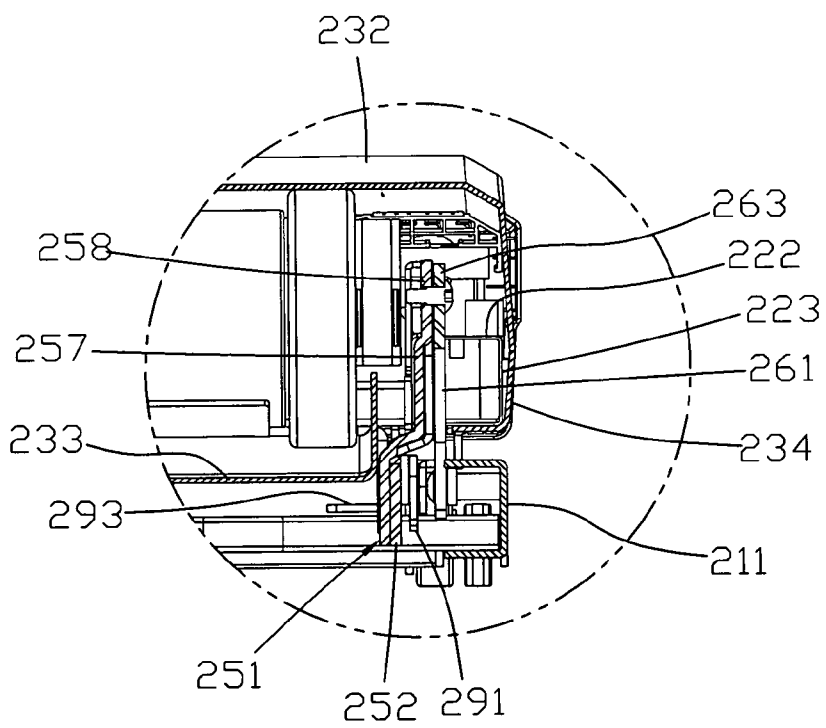


Fig. 16A

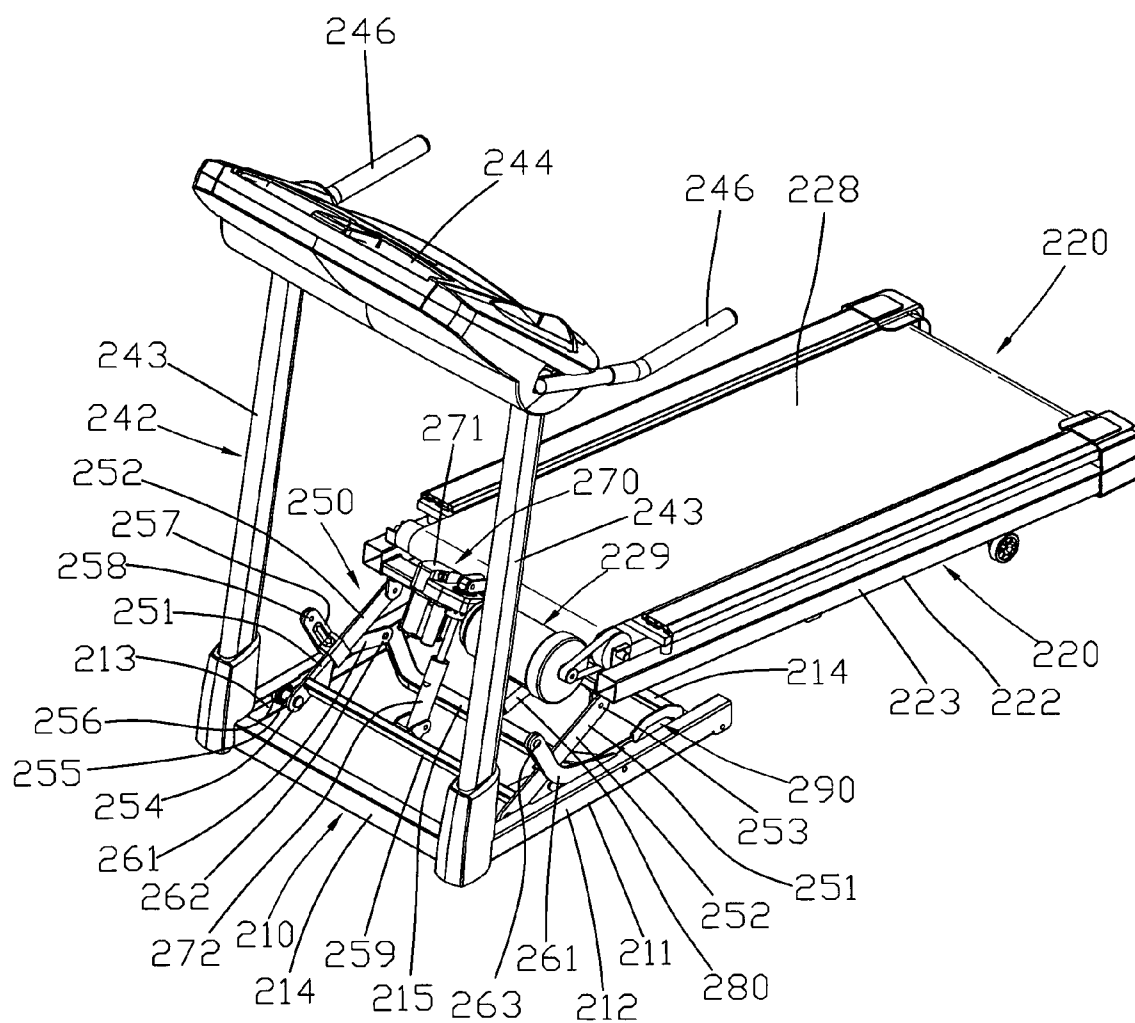


Fig. 17

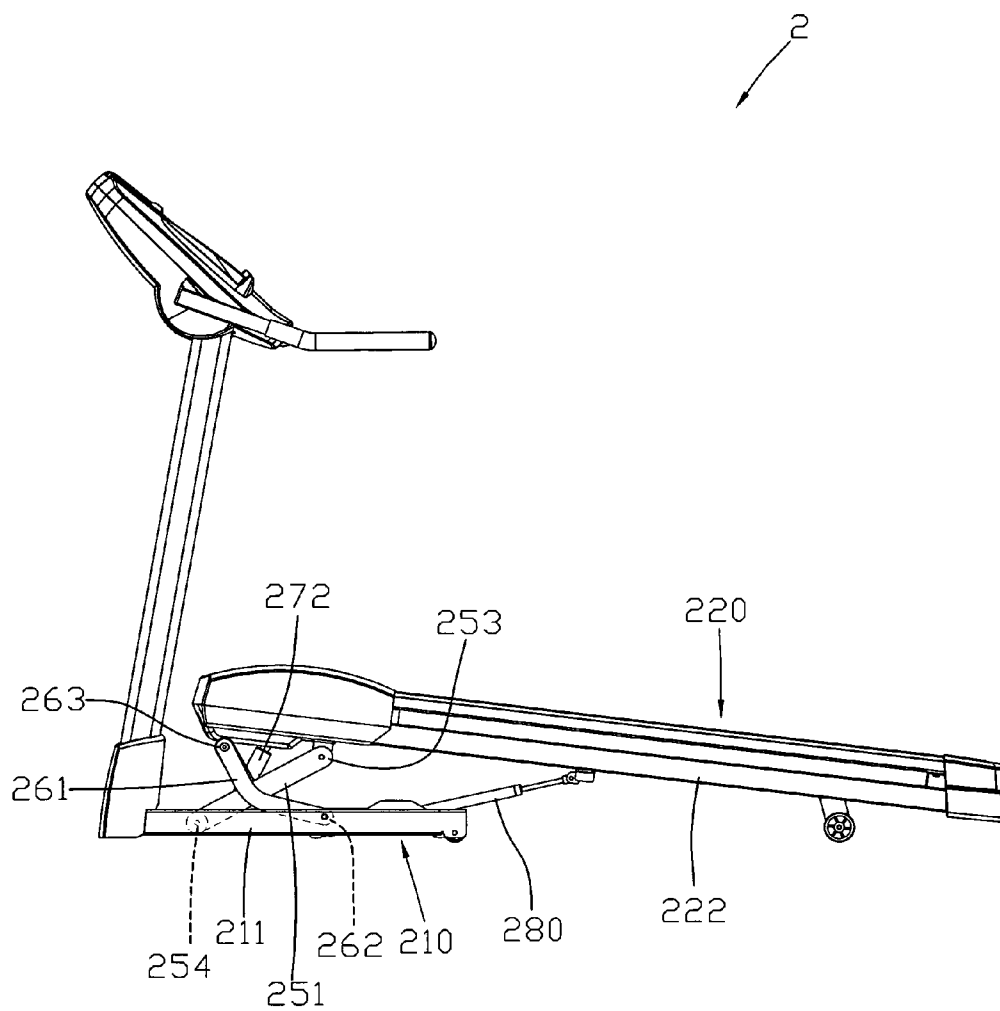


Fig. 18

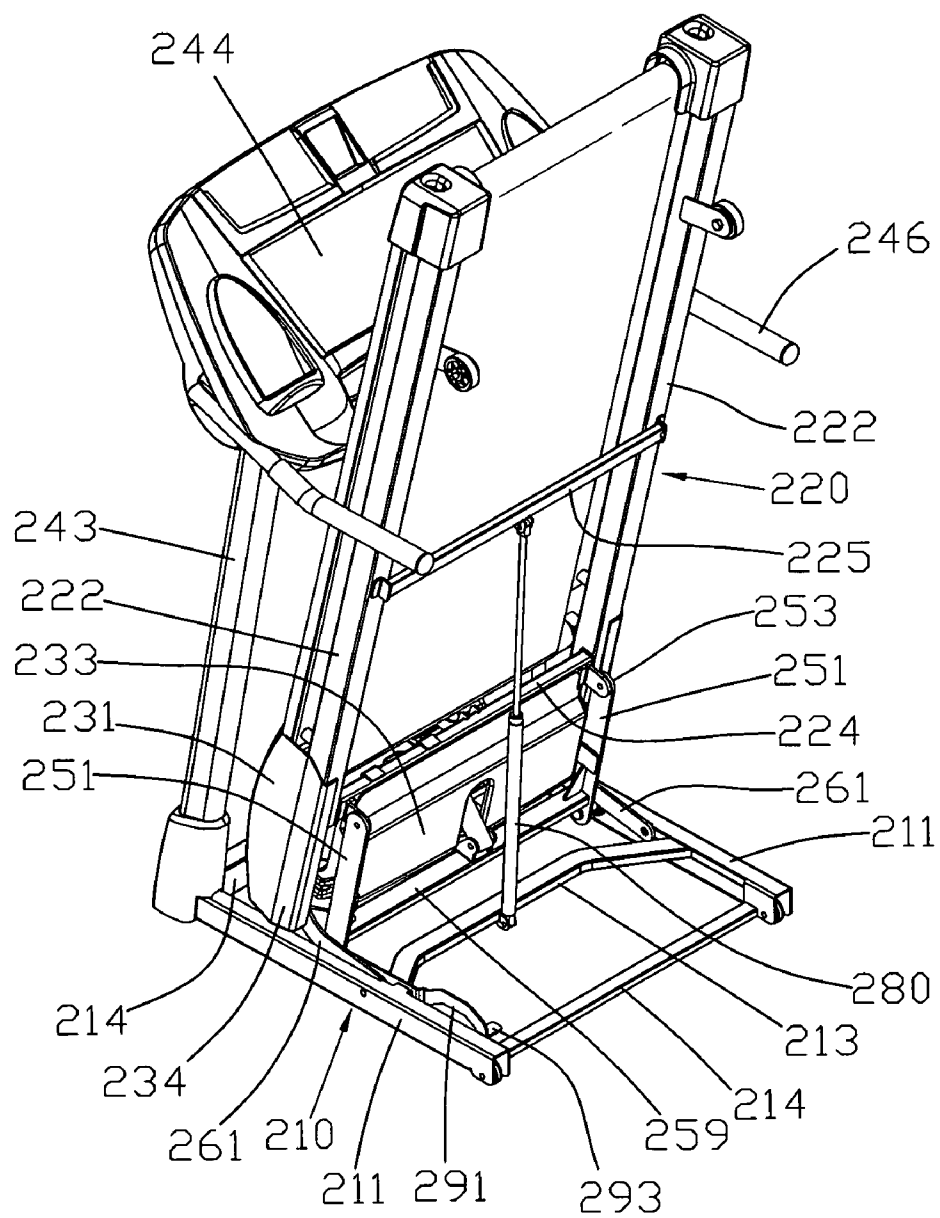


Fig. 20

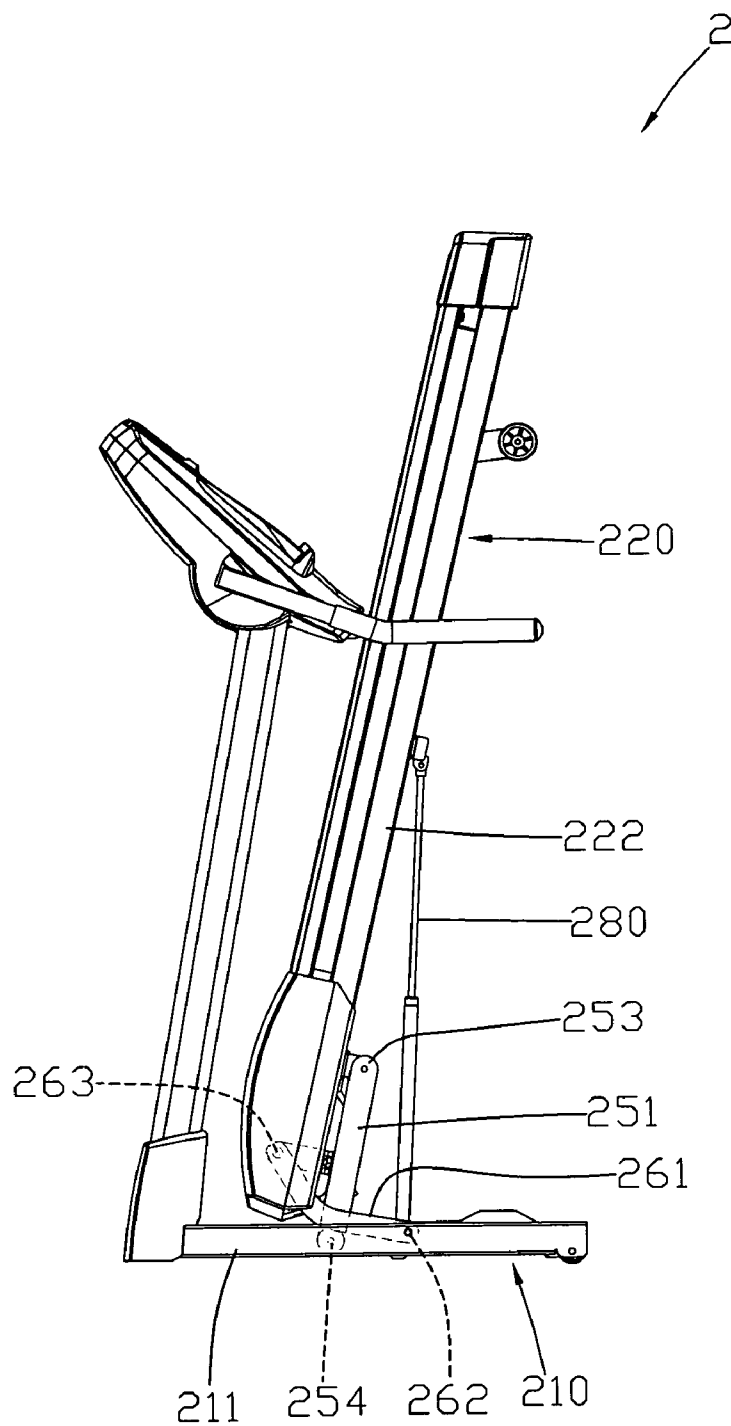


Fig. 21

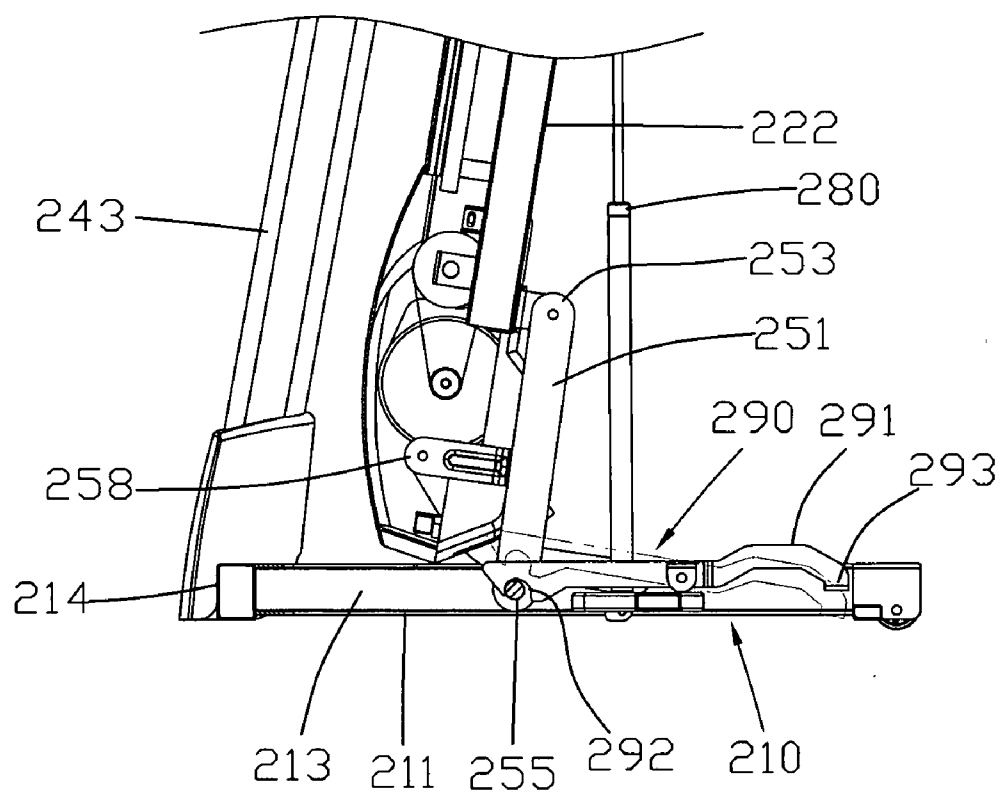


Fig. 22

TREADMILL HAVING A COMPACT SHAPE

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority of Chinese Invention Patent Application No. 200720195335.9, filed on Nov. 9, 2007, and Chinese Invention Patent Application No. 200810111151.9, filed on Jun. 10, 2008.

BACKGROUND

[0002] 1. Field of the Invention

[0003] This invention relates to treadmills, more particularly to the treadmills with a compact size for save the space in transport and increase the capacity of the container.

[0004] 2. Description of the Related Art

[0005] Treadmills are popular exercise apparatuses which permit a user to perform physical activities, such as walking, jogging or running movements, so as to exercise the cardiovascular system and the other parts of the body. Since treadmills are bulky and occupy a considerable space, it becomes a trend to design a treadmill with foldable tread base in order to decrease the volume of the treadmill when the treadmill is stored.

[0006] CN 200420064728.2 shows a foldable treadmill which includes a tread base supported by a foot structure, a pair of guide plates formed with elongated slots on two sides of the tread base. The tread base is connected pivotally on the base support through pivot members which are mounted movably within the respective slots so that the tread base is turnable between rearward when the tread base turns to the folded position or forward when the tread base turns to the unfolded position. However, since the guide plates are mounted on the sides of the tread base and the top side of the foot structure, the width of the foot structure must be larger than the width of the tread base. In other words, the size of the treadmill is a little larger.

[0007] CN 200420002326.X discloses another foldable treadmill which has a linkage unit. Said linkage unit comprises left and right guide members and left and right linked members. Said each of the left and right guide members has a first end pivoted to the base frame and a second end pivoted to the guided portion of the linked member. Each of the left and right linked members has one end pivoted to the tread base and the other end which has a roller pivotally mounted thereon. Said left and right guide members are approximately mounted nearby the second end of the left and right linked members and extended perpendicular therefrom. Each of the left and right guide members and each of the left and right linked members are respectively mounted on the left and right side of the base frame.

[0008] While various forms of foldable treadmills have been suggested in the art, however, there is a common limitation in the most of the treadmills. That is the width of the base frame is bigger than the width of the tread base, so that the tread base can be accommodated in the base frame. Therefore, there is a need for an improved treadmill having compact size.

SUMMARY

[0009] The present invention relates to a treadmill which has a compact size. More particularly, the lateral width thereof is narrower. Therefore, the treadmill is easily to transport or store.

[0010] In a preferred embodiment of the present invention, the treadmill comprises a base frame adapted to rest on a surface, which having a left and right inner surfaces, a left and right outer surfaces. The treadmill comprises a tread base having a frame that includes a front portion connected to the base frame and a rear portion. The treadmill also comprises left and right support structures. Each of the left and right support structures has a top end and a bottom end. The bottom end thereof respectively mounted on the outer surface of the left side and right side of the base frame, and the width of the base frame is approximately same as the width of the tread base.

[0011] In another embodiment of the present invention, the treadmill comprises a base frame adapted to rest on a surface, which having left and right outer surfaces. The treadmill also comprises a tread base coupled to the base frame. The tread base also has left and right outer surfaces. The left and right outer surfaces of the tread base are substantially positioned over the left and right outer surfaces of the base frame. The treadmill further comprises left and right guide members connected to the base frame and left and right linking members respectively interconnected to the left and right guide members and the tread base. Both the left and right guide members and left and right linking members are arranged inside the left and right outer surface of the tread base. The treadmill further comprises a linkage assembly having a first end coupled to the front of the tread base and a second end coupled to the base frame. The width between the left and right inner surfaces of the base frame is substantially smaller than the width between the left and right outer surfaces of the tread base. The linkage assembly is approximately positioned in a space which is formed by the left and right inner surfaces of the base frame and the bottom of the tread base.

[0012] Several objects and advantages of the present invention are: (a) to provide a treadmill comprising a base frame which has a proper lateral width smaller than the tread base, so that the treadmill has a compact size; (b) to provide a treadmill concluding a base frame which has a suitable lateral width approximately same as the tread base, so that the treadmill has a compact size.

[0013] The reader is advised that this summary is not meant to be exhaustive. Further features, aspects, and advantages of the present invention are described and illustrated herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a perspective view of a treadmill of the present invention with the tread base in horizontal position for a user to perform exercise;

[0015] FIG. 2 is a front view of the treadmill of FIG. 1;

[0016] FIG. 3 is another perspective view of the treadmill of FIG. 1 with the tread base folded to upright position;

[0017] FIG. 4 is a schematic perspective view of the treadmill of FIG. 1 when the treadmill is taken apart;

[0018] FIG. 5 is a partial perspective view of a support structure and a base frame of the treadmill of FIG. 1;

[0019] FIG. 6 is an another partial perspective view of FIG. 5;

[0020] FIG. 7 is an exploded view of FIG. 5 which shows how bottoms of support structures are connected to the base frame;

[0021] FIG. 8 is a section plan view of a joint connected between one of the support structure and the base frame;

[0022] FIG. 9 is a perspective view of an alternative embodiment of a treadmill according to the present invention;

[0023] FIG. 10 is a side view of the treadmill of FIG. 9;
 [0024] FIG. 11 is a bottom view of the treadmill of FIG. 9 without a cover unit in front of the treadmill;
 [0025] FIG. 12 is a cutaway view about the IV-IV axis of FIG. 10;
 [0026] FIG. 13 is a cutaway view about the V-V axis of FIG. 12;
 [0027] FIG. 14 is a cutaway view about the VI-VI axis of FIG. 12;
 [0028] FIG. 15 is a cutaway view about the VII-VII axis of FIG. 13;
 [0029] FIG. 15A is an amplified view of the circle portion in FIG. 15;
 [0030] FIG. 16 is a cutaway view about the VIII-VIII axis of FIG. 13;
 [0031] FIG. 16A is an amplified view of the circle portion in FIG. 16;
 [0032] FIG. 17 is a perspective view of the treadmill without the cover unit in front of the tread base when the tread base is inclined relative to the base frame;
 [0033] FIG. 18 is a side view of the treadmill of FIG. 17;
 [0034] FIG. 19 is a side view of the treadmill illustrated the tread base during a process of folding to the storage position;
 [0035] FIG. 20 is a perspective illustration of the treadmill of FIG. 9 with the tread base folded in a storage position;
 [0036] FIG. 21 is a side view of the treadmill of FIG. 20;
 [0037] FIG. 22 is a partial amplified cutaway view of the treadmill of FIG. 21;

DETAIL DESCRIPTION

[0038] Referring now specifically to the figures, in which identical or similar parts are designated by the same reference numerals throughout, a detailed description of the present invention is given. It should be understood that the following detailed description relates to the best presently known embodiment of the invention. However, the present invention can assume numerous other embodiments, as will become apparent to those skilled in the art, without departing from the appended claims.

[0039] Now referring to FIGS. 1 and FIG. 2, a treadmill 1 according to the present invention is shown. The treadmill 1 comprises a base frame 10, a tread base 30 coupled to the front of the base frame 10, left and right support structures 50 which are respectively extended upward from the base frame 10, and a console 80 mounted on the tops of the left and right support structures 50.

[0040] The left and right support structures 50 and the console 80 are fixed on the base frame 10. The tread base 30 can move relative to the base frame 10. More particularly, if the treadmill 1 is in use, the tread base 30 rested on horizontal position depicted as FIG. 1. If not, the tread base 30 can be optionally lifted upward relative to the front of the base frame 10 and positioned at upright position depicted as FIG. 3.

[0041] The console 80 has an input surface for a user to input some indicates which includes speed rates, incline degrees to control the treadmill 1.

[0042] Referring to FIG. 7, the base frame 10 has left and right side members 11, a front member 12, a rear member 13, and a cross member 14 mounted approximately on the middle of the left and right side members 11 between the front member 12 and the rear member 13. The base frame 10 further comprises four foot-pads 15 which are respectively mounted on the bottom surface of the left and right side members 11 and contacted with the surface for stability.

[0043] Please refer to FIG. 1, the tread base 30 has a frame 31 includes a front portion, a rear portion, a left side, a right side and an endless belt 32 surrounded the front portion and the rear portion. The tread base 30 also has side covers 33 respectively mounted on the left and right sides of the tread base 30, and a front cover 34 mounted on the tread base 30. Motor and other related electronic components are covered by the front cover 34 (not shown in FIGS.). The lateral width of the front cover 34 is same as the width between the side covers 33, as depicted in FIG. 2, the width of the tread base 30 is W1.

[0044] Referring to FIG. 3, the front portion of the tread base 30 is coupled to the base frame 10 through a linkage assembly 40 which comprises left and right pivoting members 41, a transverse member 42 and a driving member 43. Each of the left and right pivoting members 41 has a first end pivoted to the tread base 30 and a second end pivoted to the base frame 10. The transverse member 42 is interconnected to the left and right pivoting members 41. Besides, the driving member 43 which is actuated by the motor (not shown) is coupled to the middle portion of the transverse member 42. Therefore, the tread base 30 can be rotated via the pivoting member 41 between the first horizontal position depicted in FIG. 1 and the second upright position depicted in FIG. 3 as mentioned above. Moreover, when in the first horizontal position, the front portion of the tread base 30 can change the degrees of the inclination through adjusting the driving member 43. A cross brace 35 is approximately positioned in middle of the left and right sides of the tread base 30. One end of the cross brace 35 is mounted to the bottom of the left side of the tread base 30 and the other end thereof mounted to the bottom of the right side of the tread base 30. An air spring 44 is interconnected between the cross member 14 of the base frame 10 and the cross brace 35. The air spring can make the user to pull the tread base 30 upward easily and slow down the falling speed of the tread base 30. The technique introduced before is belong to the prior art. So that the details of the driving member 43, such as using screw rod and sleeve, should be known by people skilled in the art. In this invention, the linkage assembly 40 can be replaced by some other equivalent structures to achieve the same functions as introduced before.

[0045] Referring to FIG. 2, the lateral width of the base frame 10 is approximately same as the lateral width W1 of the tread base 30, moreover, each of the fronts of the left and right sides of the tread base 30 is respectively positioned over each of the left and right side members 11 of the base frame 10.

[0046] Referring to FIGS. 7 and FIG. 8, each of the left and right side members 11 of the base frame 10 is a rectangular metal tube. The left and right side members 11 have outer surfaces 21/22, top surfaces, and inner surfaces. The Outer surfaces 21/22 and the inner surfaces of the left and right side members 11 are respectively left and right outer sides and left and right inner sides of the base frame 10. Besides, each of the left and right outer surfaces 21/22 has three transverse holes 23 penetrated thereon. Each of the top surfaces also has a vertical hole 25 penetrated thereon. Correspondingly, there are three first screw caps 24 transversely mounted on each of the inner surfaces opposite with the transverse holes 23 respectively, and a second screw cap 26 vertically mounted on the top surface opposite with the vertical hole 25. Portions of the outer surfaces 21/22 with the transverse holes positioned thereon forms outward connecting portions 27 of the base

frame 10, and portions of the top surfaces with the second screw cap 26 forms upward connecting portions 28 of the base frame 10.

[0047] Referring to FIG. 4, FIG. 5 and FIG. 6, each of the left and right support structures 50 has a post 51 which has a top end, a bottom end, an inner surface and an outer surface. There is a strengthening plate 52 welded on the inner surface at the bottom end of the post 51. At the outer surfaces of the strengthening plate 52, there are two extending members 53/54 welded thereon. One pair of the extending portions 53 are extended transversely toward each other. And the extending portions 54 are extended rearward. Under the extending members 53, there are substantially vertical portions of the strengthening plates 52 and extending members 54 which face the left and right outer sides of the base frame 10. These portions and extending members 54 form inward connecting portions 55. And the extending members 53 form downward connecting portions 56 which are respectively perpendicular to the inward connecting portions 55. Referring to FIG. 6 and FIG. 8, the inward connecting portions 55 and the downward connecting portions 56 of the left and right support structures 50 are respectively fixedly mounted to the outward connecting portions 27 and upward connecting portions 28 of the base frame 10. There is a first bore 58 disposed on each of the downward connecting portions 56 coaxially with the vertical hole 25 and the second screw cap 26. And there are three second bores 57 disposed on each of the inward connecting portions 55 coaxially with the transverse holes 23 and the first screw cap 24. Each of the downward connecting portions 56 parallel with the top surface of the base frame 10 and fixedly mounted to the corresponding upward connecting portion 28 by fastening a vertical screw 62 via the first bore 58, the second screw cap 26 and the vertical hole 25. Each of the inward connecting portions 55 is fixedly mounted to the corresponding outward connecting portion 27 of base frame 10 by fastening lateral screws 61 via the second bores 57 and transverse holes 23.

[0048] Referring to FIGS. 1 and FIG. 3, the front of the tread base 30 is positioned between the left and right support structures 50, more particularly, for the sake of the structure of the extending members 53 and 54, each of the inner surfaces of the posts 51 of the left and right support structures 50 has a distance from the left and right outer sides of the base frame 10, so that no interference exist. Referring to FIG. 2, the lateral width between the bottom of the left and right support structures 50 is W2, which is larger than the lateral width W1 of the tread base 30 or the base frame 10.

[0049] Referring to FIG. 1 and FIG. 5, there are post-covers 70 respectively disposed on the outer surface of the left and right support structures 50 at joint places which the left and right support structures 50 are mounted to the base frame 10. The post-cover 70 has a tube-like portion 71, an outer covering portion 72, a front covering portion 73 and a rear covering portion 74. Each of the outer, front and rear covering portions 72/73/74 is extended from the tube-like portion 70 and connected adjacently with each other.

[0050] When shipped, the treadmill 1 must be taken apart as shown in FIG. 4. The tread base 30 is coupled with base frame 10 through the linkage assembly 40. However, the left and right support structures 50 and the console 80 are not mounted to the base frame 10. In a preferred manner, the tread base 30 and the base frame 10 as a whole are deposited on the bottom of a carton, then the left and right support structures 50 and the console 80 are respectively deposited on the top of the tread

base 30. Thereafter the treadmill 1 only takes the same space as that the tread base 30 takes in longitudinal and lateral direction. So that this assembling manner in shipment can reduce the volume of the carton and make one container to accommodate more cartons. When a user purchases this kind of the treadmill 1 and wants to use it, he or she must first fix the left and right support structures 50 onto the base frame 10 through the lateral screws 61 and the vertical screw 62, and then install the post-covers 70 in the pre-discussed position, and finally mount the console 80 to the tops of the left and right support structures 50.

[0051] Generally, when in shipping, the lateral width of a prior treadmill is about W2. The reason is that the left and right support structures are mounted on the top surface of the base frame. Therefore the lateral width of the base frame must be larger than the tread base. So that the tread base can be positioned between the left and right support structures.

[0052] FIG. 1 to FIG. 8 shows a preferred embodiment of present invention. In this first embodiment, because the folding manner of the treadmill 1, the left and right support structures must be mounted on the position which proximately nearby the second ends of the left and right pivoting members 41. More particularly, if the treadmill 1 is folded, the treadmill 1 will be rotated with the left and right pivoting member 41. When the treadmill 1 is in the upright position, the front of the treadmill 1, especially the front cover 34, will stay at the front of the second ends of the left and right pivoting members 41. Moreover, for securing the treadmill 1 in this folding position like FIG. 3 depicted, the left and right support structures 50 must be mounted on the outer surface of the left and right sides of the base frame 10. Otherwise, if the left and right support structures 50 are mounted on the top surface of the left and right side members 11 of the base frame 10, interference must be produced therebetween. In conclusion, the preferred manner of mounting the left and right support structures 50 to the base frame 10 is as the first embodiment described above.

[0053] FIG. 9 to FIG. 22 shows an alternative embodiment of treadmill 2 of the present invention.

[0054] Now referring to FIG. 9 and FIG. 10, an embodiment of a treadmill 2 according to the present invention is shown. The treadmill 2 comprises a base frame 210 which has left and right inner surfaces and left and right outer surfaces, a tread base 220 having a frame which has a front portion mounted on the front of the base frame 210 and a rear portion, an endless belt 228 coupled to the frame, left and right support structures 242 which are respectively extended upwardly from the base frame 210, a console 244 mounted on the tops of the left and right support structures 242, and handles 246.

[0055] Referring to FIGS. 11, FIG. 17 and FIG. 20, the base frame 210 includes left and right side members 211, and front and rear cross members 214 mounted to the left and right side members 211. An assistant cross rod 215 between the front and rear cross members 214 is also mounted on the left and right side members 211. The assistant cross rod 215 can strengthen the whole structural stability of the base frame 210.

[0056] The left and right side members 211 of the base frame 210 have an outer surface 212 separately. The distance between the left and right outer surface 212 is the lateral width of the base frame 210. The inner surfaces of the left and right side members 211 consist of grooves 213.

[0057] Referring to FIG. 17, the tread base 220 is moveably mounted on the base frame 210 through a linkage assembly

250 and an incline assembly 270. With the linkage assembly 250 and the incline assembly 270, the tread base 220 can be rotated between a horizontal position depicted in FIG. 9 and FIG. 10 and an upright position depicted in FIG. 20 and FIG. 21. Moreover, the usage situation includes the angle range from horizontal situation of the tread base 220 to 15 degrees of the tread base 220 depicted in FIG. 18. Except special situation, the description for the tread base 220 in this embodiment is at the horizontal situation.

[0058] Referring to FIG. 9 and FIG. 12, a cover unit 231 is disposed in the front of the tread base 220 including an upper cover 232, a lower cover 233 and left and right side covers 234. The cover unit 231 covers the mechanical structure and electronic unit in the front of the tread base 220, such as a driving assembly 229 and other electronic components. Each of side rails 222 of the tread base 220 is a metal tube whose section is rectangle and has an outer surface 223. Referring to the FIG. 12 and FIG. 13, the left and right side covers 234 respectively overlap the side rails 222. Therefore, there is an open space 235 in front of each of the side rails 222 and the upper and lower sides thereof are through-opened. In another embodiment (not shown), the side rail extends to the front end of the tread base, and a concave is shaped in the front of the side rail, thus also forms a through-opened space.

[0059] Please refer to FIG. 16 and FIG. 16A, the outer surface 223 of the side rail 222 of the tread base 220 and the outer surface 212 of the side member 211 of the base frame 210 are approximately on the same vertical section. Moreover, the left and right side covers 234 on the front end of the tread base 220 are nearly next to the outer surface 223 of the side rails 222. So the lateral width of the tread base 220 and the base frame 210 is almost the same (the outer surface on the front end of the tread base 220 includes the left and right outer surface of the cover unit 223 which has the outer surface of the upper cover 232 and the side cover 233).

[0060] Referring to FIG. 17, the linkage assembly 250 is coupled between the tread base 220 and the base frame 210. The linkage assembly 250 includes left and right linking members 251 and left and right guide members 261. In this embodiment, each of the left and right linking members 251 has a main plate 252 and a guiding plate 257 which having a first end welded on the middle of the main plate 252 and a guided portion 258 formed in the second end thereof. The main plate 252 has a first end 253 pivoted to the tread base 220 and a second end 254 which has an outward extending axis 255 and a roller 256 connected to the extending axis 255 rotated via the extending axis 255 and movable engaged with the groove 213.

[0061] Still Referring to FIG. 17, a connecting rod 259 is welded between the left and right linking members 251. In this embodiment, the connecting rod 259 is mounted next to the second ends 254 of the left and right linking members 251. So that the connecting rod 259 can be moved close to the ground. By using the connecting rod 259, the left and right linking members 251 can be moved more stably synchronously.

[0062] Each of the left and right guide members 261 has a first end 262 connected to the side member 211 of the base frame 210 and a second end 263 laterally pivoted with the guided portion 258 of each of the left and right linking members 251.

[0063] Referring to FIG. 15, FIG. 15A, FIG. 16 and FIG. 16A, the left and right linking members 251 and the left and right guide members 261 are positioned inside the outer sur-

face of the tread base 220 and base frame 210. Furthermore, the left and right linking members 251 are more inside than the left and right guide members 261. More particularly, each of the main plates 252 of the left and right linking members 251 is parallel to the inner surface of the side member 211. While the guiding plates 257 are extended upward from the main plates 252 and through the open space 235, the top ends of the guiding plates are higher than the side rails 222. Since the guide members 261 are crossly mounted between the side members 211 of the base frame 210 and the left and right linking members 251, when the treadmill is in use, the second ends 263 of the left and right guide members 261 could pass through the open space 235 not only when tread base 220 is in the horizontal position, but also in the inclined position.

[0064] Referring to FIG. 17, the incline assembly 270 includes a motor 271 and a retractable member 272. Under the cover unit 231, the motor 271 mounted on the front of the tread base 220 is controlled by the console 244. The retractable member 272 includes a screw and a sleeve. One end of the retractable member 272 is coupled to an output of the motor 271, and the other end is laterally pivoted to a pivoted seat which is mounted in the middle of the connecting rod via a hole on the lower cover 233. Thus the distance between the front end of the tread base 220 and the connecting rod 259 will be increased or shortened.

[0065] When the user wants to increase the elevation of the tread base 220, he can operate the console 244 to extend the retractable rod 272 of the incline assembly 270. So that the front end of the tread base 220 is depart from the connecting rod 259. At this time, combining with FIG. 18, the second ends 254 of the left and right linking members 251 move backward together with the connecting rod 259. Simultaneously, the first ends 253 of the left and right linking members 251 have to raise together with the tread base 220 and the guided portions 258 are diverted by the left and right guide members 261. On contrary, when the retractable rod 262 of the incline assembly 270 is shortened, the front end of the tread base 220 will be pulled down by the retractable rod 262. And the front ends of the left and right linking members 251 will move forward to change the left and right linking members 251 from the slant state of FIG. 18 to the flat state of FIG. 10.

[0066] When the user folds the treadmill, it is better to adjust the tread base 220 to the flat state and then lift the back end of the tread base 220 upward and forward. Referring to FIG. 19, as the left and right linking members 251 are non-movable relative to the tread base 220, the tread base 220 will rotate around the guided portions 258 of the left and right linking members 251. The higher the first ends 253 of the left and right linking members 251 are raised together with the tread base 220, the more backward the second ends 254 of the left and right linking members 251 are moved. Until the tread base 220 is rotated to the almost vertical state (80 degrees here), the treadmill will be at the foldable state as depicted in FIG. 20 and FIG. 21, and an area occupied by the treadmill 1 is just the proportion of the base frame 210.

[0067] Referring to FIG. 11 and FIG. 20, an air spring 280 is coupled between a transverse rod 225 mounted at the bottom of the tread base 220 and the cross rod 215. The air spring 280 has an extending trend because of the air elasticity therein. When the tread base 220 is in the flat state, the air spring 280 is compressed. So that the user can lift the tread base 220 easily from flat to folded state with the extending force of the air spring 280. Contrary, the elasticity of the air

spring **280** can buffer the gravity of the tread base **220** and makes it falling slowly. The structure and application of the air spring **280** is the prior art of the foldable treadmill.

[0068] Referring to FIG. **14** and FIG. **22**, there is a securing unit **290** mounted on the inside surface of the left side member **211**. The securing unit **290** can pitch the tread base **220** on the folded state, avoid collapse. The securing unit **290** includes a metal lever **291**. The middle of the metal lever **291** is mounted on the inside surface of the side member **211**. The front end of the metal lever **291** is consisted of a semicircle downward hatch locking end **292**, and the back end is consisted of a pressing end **293** controlled by the user. Besides, a spring (not shown) between the front end of the lever **291** and the base frame **210** pulls down the front side of the lever **291** and makes it flat as FIG. **14**. When the tread base **220** is rotated to the vertical state, the extending axis **255** on the outside surface of the left linking member **251** moves to the front end of the lever **291**, then the front end of the lever **291** will be extruded open and then locked, and the locking end **292** hooks the extending axis **255** as FIG. **22**. So that the front end of the left linking member **251** can not move forward and the tread base **220** will not overturn. When the user pulls the tread base **220** from folded to flat state, he has to step on the pressing end **293**, then the front end will be lifted and release the axis **255**. And the front end of the left linking member **251** can move forward again. The structure and action of the securing unit **290** is prior art.

[0069] Here, the left and right linking members **251** and left and right guide members **261** can achieve the same or substantial action with different mechanisms. For example, the second ends **254** of the left and right linking members **251** may be at the back of the first ends **253**, and the guided portion **258** may be superimposed the first end **253** or further from the second end **254** than first end **253**. Similarly, the first ends **262** of the left and right guide members **261** may be in the front of the second ends **263**.

[0070] Besides, the side rails **222** of the tread base **220** are not necessary to make use of the structure described above (discontinued or carved). During production, the side rails **222** can be extended to the front end of the tread base **220**. But the left and right linking members **251** and left and right guide members **261** must be moved further inward to the inside surface of the side rails **222**. The reason for arranging the said open space **235** is to set the driving assembly **229**, incline assembly **270** and electronic unit and the left and right linking members **251** and left and right guide members **261** do not to occupy the space inside of the side rail **222**.

[0071] In the prior foldable treadmill, the lateral width of the base frame will larger than the tread base about 20 centimeters. So that the left and right linking member and the left and right guide member can be mounted therebetween. Referring to FIG. **15**, FIG. **15A**, FIG. **16** and FIG. **16A**, in this invention, as the left and right linking members **251** and left and right guide members **261** are inside the outer surface of the side rails **222** and also inside the side members **211**. The outer surface of the left and right sides of the tread base **220** is above that of the base frame **210**, and the lateral width of the base frame **210** and tread base is similar. In another embodiment, the tread base **220** is even wider than the base frame **210**.

[0072] From the above description, comparing to the prior treadmill, for this invention, the lateral width of the base frame **210** is not larger than the tread base **220**. So the lateral width of the treadmill in this invention will be narrow with the

same as tread base. For the users, these kinds of treadmills occupies less space and easily to move and stow. For business, the smaller package of the product can improve the storage and transportation, especially for the shipment with container by truck or by sea. The advantage can increase the quantity in one container and cost down.

[0073] Additionally, the linkage assembly **250** of this preferred embodiment is similar to that of Chinese Invention Patent Application 200420002326.X, but it may use the structure of the Chinese Invention Patent Application 200420064728.2. That is to say that the left and right guide members are connected to the base frame with the connect portions. And each of the left and right guide members includes a groove guide portion, and each of the guided portion of the left and right linking members is limited to move along the groove. Of course, the other similar art of linkage assembly will be used, combining with the art in this preferred embodiment to get the same effect and advantage.

[0074] The present invention does not require that all the advantageous features and all the advantages need to be incorporated into every embodiment thereof. Although the present invention has been described in considerable detail with reference to certain preferred embodiment thereof, other embodiments are possible. Therefore, the spirit and scope of the appended claims should not be limited to the description of the preferred embodiment contained herein.

What is claimed is:

1. A treadmill comprising:

- (a) a base frame adapted to rest on a surface, which having left and right inner sides and left and right outer sides defining a lateral width;
- (b) a tread base having a frame and an endless belt coupled to said frame, the frame including a front portion connected to said base frame and a rear portion, the front portion having left and right outer sides defining a lateral width, wherein the lateral width of the tread base is approximately same as the lateral width of the base frame; and
- (c) left and right support structures, each of said left and right support structures having a top end and a bottom end, said bottom ends respectively mounted on said left and right outer sides of the base frame.

2. The treadmill of claim 1, wherein the front of said tread base is positioned between the left support structure and the right support structure.

3. The treadmill of claim 1, wherein fronts of left and right outer side of the tread base are positioned over the left and right outer sides of the base frame.

4. The treadmill of claim 2, each of said left and right support structures having a post and an extending member, wherein each of the extending members extends from the bottom end of post and is mounted on the base frame.

5. The treadmill of claim 1, each of said left and right outer sides of the base frame further comprising an outward connecting portion, correspondingly, each of said bottom ends of said left and right support structures further comprising an inward connecting portion which is mounted with said outward connecting portion.

6. The treadmill of claim 4, said base frame further comprising upward connecting portions which are mounted nearby the outward connecting portions of said left and right outer sides of the base frame, correspondingly, each of the bottom ends of the left and right support structures further

comprising a downward connecting portion which is mounted with said upward connecting portion.

7. The treadmill of claim 5, further comprising a plurality of screws which mount said bottom ends of said left and right support structures on said base frame.

8. The treadmill of claim 1, wherein a distance between said bottoms of said left and right support structures is longer than said lateral width of said base frame.

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